

Contemporary Wireless

1. What are the two dominant forms of wireless?
 - a. Cell phones and palm pilots
 - b. Cell phones and radios
 - c. Wireless LANs and cell phones
 - d. Wireless LANs and wireless computers
2. The first generation of cell phones were
 - a. Analog
 - b. Combination of analog and digital
 - c. Digital
 - d. Unknown
3. What advancements were made with the third generation (3G) cell phones?
 - a. They could handle computer data
 - b. They required minimal spectrum space
 - c. They were more reliable than analog
 - d. They were the first digital phones
4. The 3G cell phones are very popular and widely used today.
 - a. True
 - b. False
5. What does the modern cellular telephone system use to provide coverage over an entire city?
 - a. Many overlapping cell sites
 - b. Many public telephone switching offices
 - c. One large cell site
 - d. Any of the above will work
6. All cell sites in a coverage area are equal in shape and size
 - a. True
 - b. False
7. A cell phone will communicate with a
 - a. Cell site base station
 - b. Computer network base station
 - c. Mobile telephone switching office
 - d. Public switched telephone network



8. Each cell site will communicate with
 - a. A mobile telephone switching office
 - b. A public switched telephone network
 - c. Other cell site base stations
 - d. All of the above

9. The shape of cell site coverage area is roughly
 - a. Hexagonal
 - b. Rectangular
 - c. Circular
 - d. Triangular

10. When a cell phone subscriber travels out of one cell site
 - a. A lot of noise is heard
 - b. It is automatically picked up by the next cell site
 - c. The call is terminated
 - d. You are switched to roaming mode

11. Each cell site has an antenna array that is divided into _____ areas
 - a. Two
 - b. Three
 - c. Four
 - d. Six

12. By dividing a cell site into different sectors, it will
 - a. Increase the coverage area
 - b. Increase the number of potential subscribers
 - c. Reduce the noise to the subscribers
 - d. Reduce the number of base stations needed

13. Currently, the standard cell phones spectrum space has two _____ bands.
 - a. 30 kHz
 - b. 10 MHz
 - c. 25 MHz
 - d. 50 MHz

14. The upper spectrum is used for
 - a. Both uplink and downlink between the base station and cell phone
 - b. Communication between cell phones and the switching office
 - c. Downlink from the base station to the cell phones
 - d. Uplink from the cell phones to the base station



15. Spectrum space in the 1900 MHz range is used by
 - a. Analog phones
 - b. Digital phones
 - c. Two way radios
 - d. Wireless networks

16. Another name for the 1900 MHz band is the
 - a. Personal communications service band
 - b. Primary cellular service band
 - c. Radio technology service band
 - d. Special cell phone spectrum band

17. The frequency spectrum sharing concept is also called
 - a. Frequency reuse
 - b. Frequency space
 - c. Spectrum reuse
 - d. United share plan

18. Name the basic types of multiple access

19. One way each channel is designated is by its
 - a. Bandwidth
 - b. Center frequency
 - c. Digital code
 - d. Upper frequency

20. Each channel used in FDMA can hold multiple phone calls and uplink or downlink at the same time.
 - a. True
 - b. False

21. In time division multiple access (TDMA), the voice signals must first go through a/n
 - a. Amplifier
 - b. Analog-to-digital converter
 - c. Digital-to-analog converter
 - d. Vocoder

22. An ADC samples the signal and produces
 - a. A 16 bit digital word
 - b. An 8 bit binary number
 - c. An amplified signal
 - d. Voltage level



23. In order for all the information to be retained, the sampling rate must be at least
- As high as the maximum frequency of the signal
 - Four times greater than the maximum frequency of the signal
 - Greater than 2 KHz
 - Two times the highest frequency of the signal
24. A common sampling rate for voice signals is
- 2 kHz
 - 4 kHz
 - 8 kHz
 - 16 kHz
25. Pulse code modulation is the transmission of data
- Eight bits at a time
 - In parallel
 - One bit at a time
 - One word at a time
26. If you have a bit time of 10 microseconds, what is the serial data rate?
- 10 kilobits per second
 - 100 kilobits per second
 - 1000 kilobits per second
 - Not enough information
27. In order to reduce the bandwidth needed to transmit data, a _____ is used to compress it
- ADC
 - DAC
 - Multiplexer
 - Vocoder
28. What is another name for the combination of an ADC and a Vocoder?
- CODAC
 - CODEC
 - DACODER
 - DIGICODE
29. Which method of multiple access allows more than one user to use the same frequency?
- Code division
 - Frequency division
 - Lane division
 - Time division



30. Why can't users tell that their signal has been segmented?
- The binary data is being transmitted too fast
 - The data is constantly being resent
 - The user is not on the phone long enough
 - There is too much noise
31. What three components are needed to recreate the original voice signal in TDMA?
32. Code division multiple access is also known as
- Code spectrum
 - Duplicate spectrum
 - Multiple spectrum
 - Spread spectrum
33. Which multiple access method uses a large available spectrum range instead of assigning a specific frequency to each user?
- Code division multiple access
 - Frequency division multiple access
 - Spatial division multiple access
 - Time division multiple access
34. In CDMA, how are individual conversations selected?
- Each conversation goes through a specific base station
 - Each conversation has a specific data rate
 - Each conversation is at a specific frequency
 - Each conversation is encoded with a pseudo-random digital code
35. In spatial division multiple access (SDMA), multiple users can share the same frequency bands because
- Each user has a specific code
 - Only one bit of data is transmitted at a time
 - The antennas transmit/receive over a very narrow range
 - The antennas used are extremely long and wide
36. Antennas which can select a desired signal are called
- Adaptive arrays
 - Extreme arrays
 - Genius antennas
 - Selective antennas
37. All phones use _____ communication.
- Quarter duplex
 - Half duplex
 - Full duplex
 - Double duplex



38. In frequency division duplex, transmitting and receiving is done
- At different frequencies
 - At different times
 - In parallel
 - In series
39. Time division duplexing requires the signals to be
- Amplified first
 - At different frequencies
 - In a very narrow bandwidth
 - In serial digital format
40. The specifications and standards used in cell phone service is referred to as
- Cell phone plans
 - Cell phone technology
 - Cellular agenda
 - Cellular systems
41. Which cell phone system did the early analog phones use?
- Advanced mobile phone system
 - Global systems for mobile communications
 - Serial data systems
 - Time division multiple access
42. What is the serial data rate for TDMA?
- 22.4 kbps
 - 48.6 kbps
 - 96.1 kbps
 - 126 kbps
43. Which system is a time division multiple access system?
- AMPS
 - GSM
 - FDMA
 - AARP
44. Global system for communication (GSM) allows _____ users to transmit though a single channel.
- 2
 - 4
 - 8
 - 10



45. Which of the following U.S. cell phone carriers use GSM?
- Cingular
 - T-mobile
 - Verizon
 - Both (a) and (b)
46. By adding enhanced data for global evolution (EDGE) to GPRS, data rates as high as _____ are possible.
- 100 kbps
 - 224 kbps
 - 384 kbps
 - 701 kbps
47. What is the standard used by code division multiple access?
- IS-25
 - IS-54
 - IS-95
 - IS-136
48. In CDMA, about _____ signals can occupy the same channel.
- 10 to 20
 - 20 to 30
 - 40 to 60
 - 80 to 100
49. Which U.S. cell phone service providers use CDMA?
- Cingular
 - Sprint
 - T-mobile
 - All of the above
50. Which standard added the data handling capability to the IS-95 standard?
- CDMA2000
 - Edge
 - GSM
 - TDMA
51. What is the main disadvantage of the WCDMA standard?
- It can only be used with digital phones
 - It has a slow data rate
 - It is hard to maintain
 - It requires large spectrum space



52. Local area networks allow individuals to
 - a. Access the internet
 - b. Send emails
 - c. Share company resources
 - d. All of the above

53. In order for an individual PC to access a WLAN, it must have a
 - a. Modem
 - b. Telephone line
 - c. Wireless network interface card
 - d. Wireless remote

54. Wireless network interface cards are
 - a. An access point to the server
 - b. Hard wired to a telephone line
 - c. The storage device for all emails
 - d. Two way radios that communicate with the access point

55. Access points installed in public locations are called
 - a. Hot spots
 - b. Local hubs
 - c. Public network cards
 - d. T1 lines

56. How do hot spots communicate with an Internet service provider?
 - a. By email
 - b. By radio
 - c. Through a telephone line called a T1 line
 - d. None of the above

57. What is the function of a server?
 - a. Create access points
 - b. Maintain the clock
 - c. Manage the network
 - d. Store all emails

58. What is the maximum outdoor transmission range for a WLAN?
 - a. 100 feet
 - b. 200 feet
 - c. 300 feet
 - d. 500 feet



59. Why does the WLAN transmission range decrease indoors?
- The home lights cause interference
 - The radio signals are absorbed by the walls and other solid items
 - The temperature indoors is higher
 - There is not enough air circulation indoors
60. Which WLAN standard operates in the 5.8 GHz band?
- 802.11
 - 802.11a
 - 802.11g
 - 802.11x
61. The Wi-Fi Alliance sponsors a certification program, which ensures compliance and interoperability.
- True
 - False
62. Short range wireless technology is designed for operation
- Up to 10 feet
 - Up to 30 feet
 - Over 50 feet
 - Over 100 feet
63. In a mesh network, the communication range is extended because
- A more sophisticated transmitter is used
 - Data can pass from one node to another
 - The data is sent one word at a time
 - The nodes are farther apart
64. Name two categories of short range radio.
65. Which form of short wave radio can be found in PDA's?
- Bluetooth
 - Radio frequency ID
 - Ultra wideband
 - ZigBee
66. Which form of short wave radio is primarily used for industrial control?
- Bluetooth
 - Radio frequency ID
 - Ultra wideband
 - ZigBee



67. Bluetooth uses _____ to allow many users to share the same band
- Frequency division multiple access
 - Frequency hopping multiple access
 - Frequency hopping spread spectrum**
 - Narrow band frequency division
68. In Bluetooth, the frequency hop sequence is set by
- Code breaking circuit
 - FCC
 - Pseudo random code**
 - User
69. A Bluetooth transceiver can hop at a rate of
- 500 hops per second
 - 1100 hops per second
 - 1600 hops per second**
 - 2500 hops per second
70. ZigBee devices automatically network to form
- Master networks
 - Mesh networks**
 - Piconets
 - Random networks
71. Which short range radio technology uses very short pulses to represent binary data?
- Bluetooth
 - Radio frequency ID
 - Ultra wideband**
 - ZigBee
72. UWB is widely used today in the consumer electronics area.
- True
 - False**